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Year 2000 and Standard Administrative Codes

Revision Project

Standards and Procedures Guide

MISB Development Team

for the

CDC and ATSDR

CDC/IS Administrative Systems

August 5, 1997

Table of Contents

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Section 1: Introduction

Purpose of this Guide

The purpose of this guide is to record the methodology, the processes, and the specific revisions necessary to accomplish the Year 2000 (Y2K) and Standard Administrative Code (SAC) implementation for CDC/IS Administrative Systems. The Y2KSAC development team uses this guide as a reference document, and updates it, on an ongoing basis.

Audience for this Guide

The primary audiences for the CDC/IS Administrative Systems Year 2000 and Standard Administrative Codes Standards and Procedures Guide include the following:

- Y2KSAC development team members
- Centers, Institutes, and Offices (CIO)s personnel who are making Year 2000 or Standard Administrative Code (SAC) modifications

Access to this Guide

Authorized users can access the CDC/IS Administrative Systems Year 2000 and Standard Administrative Codes Standards and Procedures Guide online through the following path:

<drive>:\link\misb_all\Yr2ksac\document\y2ksacsp\y2ksacsp.wpd

This document is available on DocView.+

How to Use This Guide

The CDC/IS Administrative Systems Year 2000 and Standard Administrative Codes Standards and Procedures Guide is a reference document. This guide is organized into six sections and one appendix

Section 1 Introduction
First, this section provides instructional information about using this guide. Next, the section provides overview information concerning the CDC/IS Administrative Systems Year 2000 (Y2K) Standard Administrative Code (SAC) project.

Section 2 Application Specifications
This section provides a description of the application specifications, a development team tool that is used for all modifications. This section also describes the initial notification process.

Section 3 Database Management Processes
This section provides a description of the processes that the Database Administrator must complete for the Y2KSAC conversion.

Section 4 Development Team Processes
This section is divided into two parts. Part A describes the Year 2000 revision information. Part B describes the SAC revision information. After the SAC revision information, the following tasks are described:

- Conducting a Code Walk-through
- Copying an Application from Development to Test

Section 5 Testing Team Processes
This section describes the testing team processes required for Y2KSAC conversion.

Section 6 Implementation Processes
This section describes the final notification process involved in implementing the converted applications. In addition, the following task is described:

- Copying an Application from Test to Production

Appendix
This section provides a Year 2000 Program Listing. In addition, a sample of the Application Field Change Form is included.

Task Conventions

Sections 3, 4, and 5 describe processes or tasks that must be completed for the Y2KSAC conversion. The organization of the tasks is as follows:

Heading	Description
Prerequisites	Actions that need to be completed before the tas is started.
Guidelines	Information that must be acquired before the tas is started.
Follow these Steps	A series of steps necessary for task completion.

Not all tasks described in this Guide have prerequisites or guidelines.

Documentation Conventions

This document uses the following symbols and conventions:

Convention	Meaning
[BOLD CAPITALS], in square brackets	Exact keystrokes typed on screens
CAPITALS	Field names on screens and reports
BOLD CAPITALS	Program names

The following examples illustrate all these attributes:

- Press the **[ENTER]** key.
- ACTION field
- Run the **SYSMAIN** Program.

Syntax Conventions

This document uses the following syntax conventions:

Symbol	Meaning
< >	Parameters standing for a literal value or expression
( )	Required parentheses
[ ]	Exact keystrokes typed on the screen

The following examples illustrate these attributes:

- where XXXXXXXX <application name>
- Use the script: NA2x Fuser (111,2)
- Type the application name and press**[ENTER]**.

Abbreviations Used in this Guide

This document uses the following abbreviations:

Abbreviation	Meaning
ADMIN	Administrative
ADS	Application Development Section
ATSDR	Agency for Toxic Substances and Disease Registry
CDC	Centers for Disease Control and Prevention
CDC/IS	Centers for Disease Control and Prevention Information System
DHHS	Department Health and Human Services
IRMO	Information Resource Management Office
MISB	Management Information Systems Branch
OD	Office of the Director
OPS	Office of Program Support
PHS	Public Health Services
ORG	Organizational
SAC	Standard Administrative Code
Y2K	Year 2000

Project Overview

CDC/IS

The Centers for Disease Control (CDC) Information System (IS) is the framework for the online administrative systems operating on the CDC/Atlanta mainframe. The CDC/IS Administrator and the Integrated Support Section (ISS) of the Management Information Systems Branch (MISB) within the Information Resource Management Office (IRMO) provides user support, documentation, and training for all CDC/IS agency-wide activities.

Configuration

The following is the configuration for the CDC/Atlanta mainframe:

Configuration	Description
Hardware	IBM 9021 Model 60
Operating System	OS390 Release 2., JCL, JES3
Database	ADABAS 6.0
Languages	NATURAL 2.2 COBOL 2.4 COBOL II
Testing Tools	TICTOC

Purpose of the Project

The purpose of the CDC/IS Administrative Systems Year 2000 (Y2K) Standard Administrative Code (SAC) project is to accomplish two major changes in the CDC-wide systems:

- The revision of date formats to accommodate the Year 2000. This change is required to enable the processing of data that includes two millenniums.

- The revision of Standard Administrative Codes (SAC)s. This change is required to accommodate a change to the leading position of the code format. This change was mandated by the U.S. Department of Health and Human Services (DHHS).

Note: SACs also are known as Administrative (ADMIN) and Organization (ORG) codes.

The Y2K project and the SAC project are combined and assigned to one development team for the following reasons:

- Dates and SACs are pervasive throughout the CDC-wide systems.

- Both projects require a synchronized approach to changes in programs and conversion of data.

Applications for Conversion

The following applications are candidates for Y2KSAC conversion:

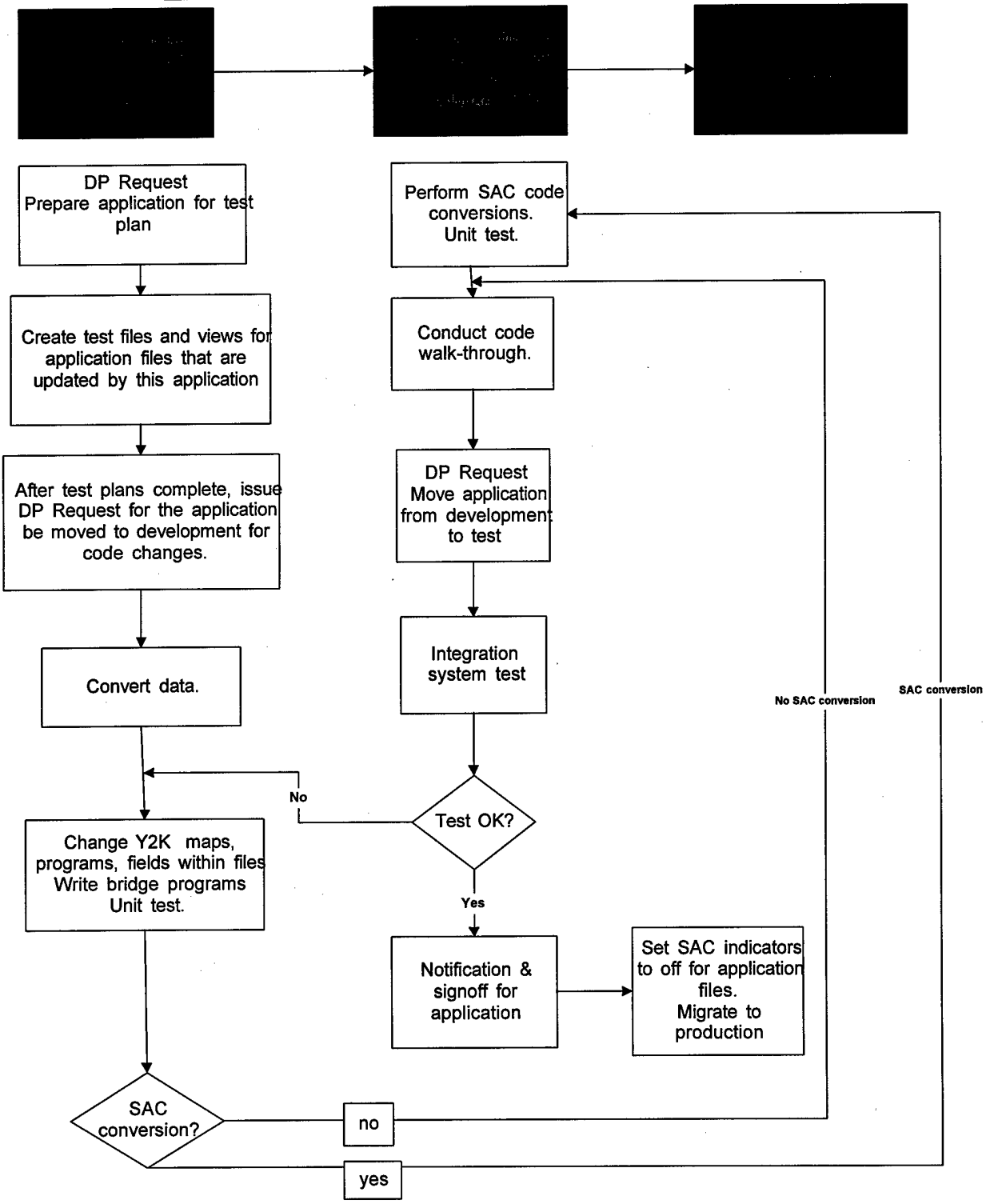
Identifier	Description of the Application
AB15AB00	EIS Directory System
AB20AB00	JARS (Billing System)
AB20AB20	JARS Batch Reporting-Downloads
AB50AB00	DP Requests and Problem Log
AB51AB10	ADMIN Office Information System
AB52AB10	Resource Index
AB53AB00	CDC ADMIN Code System
AB53AB10	CDC ADMIN Code System
AB53AB20	CDC ADMIN Code Batch Programs
AB67AB00	Computer User Account System
AB69AB00	Parking Decal
AB70AB00	Door Keys
AB90AB00	CDC/IS Code Resides here
AC01AB00	ESO Requests (Engineering Services)
ADPOREPT	Report Generator System
AD07AB00	Financial Reporting System
AD23AD00	TAV Accounting System
AH02AB00	Contracts
AH03AB00	Warehouse Inventory System
AH04AB00	Property Management System
AH04AB10	Property Management System
AH06AB00	Small Purchasing System
AH08AH00	Online Batch Processing
AH08AH20	Online Batch Processing

Identifier	Description of the Application
AHB2AB00	Contracts Batch Library
AM01AB00	CDC FTE Tracking System
AU0AUTHB	Authorization Chains Print Batch
CA05AD07	Santa Library for NIOSH
CC00AB0B	Change Control Library
DRCDCDIR	CDC Directory
MB09MB00	CDC Information System
PA00PATS	Personnel Action Tracking System
MB09MB10	CDC Information System (Batch)
PAPRINTS	CDC Prints Library (Batch)
PDPDVIEW	Personal Data View
STARTUP	CDCIS Transfer Library
SYSTEM	User System Library
TVT0TAV0	TAV Accounting System
URS0BURS	User Registration System Batch
URS00URS	User Registration

Y2KSAC Code Conversion Process Flow

The workflow on the following page illustrates an overview of the Code Conversion processes involved in implementing the Year 2000 and Standard Administrative Code (SAC) changes.

Y2KSAC Code Conversion Process Flow



Administrative Quick Reference

The Y2KSAC project team uses the following communications and tracking tools:

Tool	Description
Accounting code for TRW contractors	Job Number: 2N8424
CaLANdar	Appointment software. Use to schedule meetings for team members.
Enterprise PM (MicroMan)	Task-based time-keeping software.
Email	Mail-routing software. Global directory address: YEAR2000
Project Tracking Excel Spreadsheet	Located on: <drive>:\Link \misb_all\Yr2ksac
Tracking Sheet from the application specification	Each application specification has a tracking sheet. Major benchmarks are checked off when they are completed.

Y2KSAC Project Team

The Y2KSAC project team includes the following members:

Name	Position
Adams, Michael	TRW Y2KSAC Team Leader
Allen, Jenny	TRW Testing
Coleman, Tim	TRW Development
Edwards, Jean	TRW Testing
Kenny, Judy	CDC IRMO, MISB Chief
LaDue, Thomas	TRW Development
Long, Ken	IRMO, MISB Database Consultant
Long, Sandy	IRMO, MISB Testing Consultant
Lytle, Sharon	TRW Technical Writer
Mangum, Charles	CDC ISS, IRMO, MISB Section Chief
Perkins, Tony	IRMO, MISB Y2KSAC Project Leader
Rice, Don	TRW QA and Testing
Taylor, Peggy	IRMO, MISB Testing Consultant
Walters, Daphne	CDC Y2K Coordinator CDC/ATSDR

Section 2: Application Specifications

A specification exists for each application. The specification is a tool for the development team and is used for all modifications. The IRMO, MISB Y2KSAC project leader provides access to the specification.

Note: Before any work is started on development tasks, the developer must have a specification.

For the Y2KSAC project, the specification contains the following types of information:

- All date fields
- Related files, programs, maps, and data areas that use each date
- All Standard Administrative Code (SAC) fields
- Related files, programs, maps and data areas that use each Standard Administrative Code (SAC)
- A routing slip (sign off sheet) for the application specification
- Testing status form

Initial Notification

At this stage in the conversion process, the IRMO, MISB Y2KSAC Project Leader notifies the CDC IRMO, MISB Chief that an application is beginning the conversion process. The CDC IRMO, MISB Chief notifies through Email the following persons:

- IRM Coordinators
- Application Business Owners
- MISB staff

This notification provides an initial analysis of the application to be converted. The analysis consists of the scope of changes including the impact to output data sets and the anticipated time frame of completion.

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Section 3: Database Management Processes

This section describes the processes that the Database Administrator must complete to move from one database environment to another. All files, maps, data areas, and program modules that make up an application library are moved. The database environments are:

Database	Environment
Database 227	Production environment
Database 127	Development environment
Database 111	Testing environment

In order to prepare an application for the Y2KSAC conversion, the Database Administrator must:

- Ensure that all FUSER, FSEC, and FDIC files on database 111 are copies of production files.
- Ensure that all Development files are the same as production files.
- Ensure that CDC/IS core files are copied to database 111.
- Ensure that all Data Definition Modules (DDM)s for CDC/IS core files are re-cataloged to point to database 111.

This section describes the following tasks for database management:

- Creating test files and application libraries
- Copying an application from test to development

Creating Test Files and Application Libraries

Use these instructions to create and secure test files and libraries.

Follow These Steps

1 Create test files for the current application on database 111.

2 Run the **SYSDDM** Program and re-catalog test DDMs to point to database 111.

3 Run the **CATALL** Program on the library and point programs to files on database 111.

4 Provide appropriate access to the test application files and libraries.

Result: The application is ready to use for the development of test plans.

Copying an Application from Test to Development

Use these instructions to copy an application from the test environment, database 111, to the development environment, database 127.

Follow These Steps

1 Back up the development library, if any, to disk, and print the directory.

Note: The JCL for this program is in the ROSCOE environment and is called **NATLIBBK**.

2 Notify the Y2K teams that the development application library is replaced, and the date that the replacement occurred.

3 Run the **SYSMAIN** Program. Delete all objects from the existing development library, and copy the test library 111 to the development library 127.

4 Notify the developers that the file is in development.

5 Link the application files from the Predict file to one of the following:

- Database 127 if the files previously existed in the development environment.
- Database 111 if the files did not previously exist in the development environment.

6 Notify the developer that changes can be made to the Predict file for affected files.

Follow these Steps (continued)

7 Using input from the Y2KSAC developer, make date field modifications. Use the **SYSAOS** Program to make physical changes to the file:

   a Access file maintenance.

   b Choose Option C, FDT file mode.

   c Select Change Field length. Repeat for each field that you need to change.

8 Using input from the Y2KSAC developer, do the following:

   a Use the **SYSDIC** utility to generate DDM.

   b From the **SYSDIC** utility generate ADACMP, then save the file as member cdbid<file number>.

   Example: c127f056

   c Run ROSCOE member Punch127 to replace cmpcards for the database and the file.

   d Save in ADABAS.dbid.parmlib as member cmp<file number>.

   Example: cmp056

9 Run the **CATALL** Program and ensure that the files are linked correctly.

10 Write a program to add CENTURY to the new date formats. This program should convert the date to contain the century. Save the program for reuse during migration.

11 Back up the test files.

Result: The application is ready for program modifications.

Section 4: Development Team Processes

The development team is responsible for modifying applications to accommodate date processing and the new SAC formats. The processes include:

- Modifications to the files
- Modifications to the data areas (global, local, and parameter)
- Required modifications to the programs
- Unit testing

In order to generate a new file format, the database fields that need modifications are noted and sent to the Database Administrator. Combine these documentation notes with the input and output specifications that are distributed to the CDC contacts.

Organization of this Section

This section of the guide has two parts. Part A of this section contains Year 2000 revision information. Part B of this section contains SAC revision information.

Part A of this section describes the following task required for Year 2000 revision:

- Revising Date Fields for Year 2000 Processing

Part B of this section describes the following task required for SAC conversion:

- Revising SAC fields

After the tasks in Part A and Part B of this section are discussed, the following tasks are described:

- Conducting a Code Walk-through
- Copying an Application from Development to Test

Section 4 A: Year 2000 Development Overview

The approach of the Year 2000 requires that changes are made to the application programs in order to process date fields correctly.

Processing errors that can occur with two-digit or four-digit year fields include the following types:

The assumption that the first two digits in a year are 19, or are hard-coded as 19.

- Specific values are associated with the last two digits of a year. For example, 99 or 00 might mean "no expiration" or an unknown year.
- Incorrect validation of the date range.
- Arithmetic calculations involving dates using 00 as the last two digits produce negative results.
- Sequence errors. If sorting is by year, 00 comes before 99.
- Historical data integrity. For example, no distinction is made between 1900 and 2000.
- Leap year calculations of days in a year, days in a month, and days in a week. A leap year occurs in years evenly divisible by four. However, if the last two digits of the year are 00, leap year occurs only in years evenly divisible by 400 or four and not evenly divisible by 100.

Note: Year 2000 is a leap year so the Year 2000 has 366 days and not 365 days.

Date Format Standard

As part of the Year 2000 enablement process, MISB is converting all applications to one standard format for all current and future variable date fields within ADABAS applications.

New date fields must conform to the following standard:

- The date format is YYYYMMDD.

  Example: 19991231

- The Julian date format is YYYYDDD.

  Example: 20011231

- The word Date must be used as part of the name of newly-defined date variables.
- All date fields must be numeric definitions. This standardizes justification and facilitates the conversion of historical data.

Revisions to achieve this standard include the following:

- Date fields on any ADABAS files that are defined as N6 are defined as N8, with an edit mask of YYYYMMDD.
- Input and output date fields on data entry screens change as applicable to include the four-position year.
- Calculated date fields must result in the YYYYMMDD format.
- Date field validations use the**ONE-DATE** subprogram. Documentation of this routine is available

The date format standard does not apply in the following cases:

- Fields that use dates but are not date fields.

  Example: Transaction numbers that incorporate a portion of the transaction date.

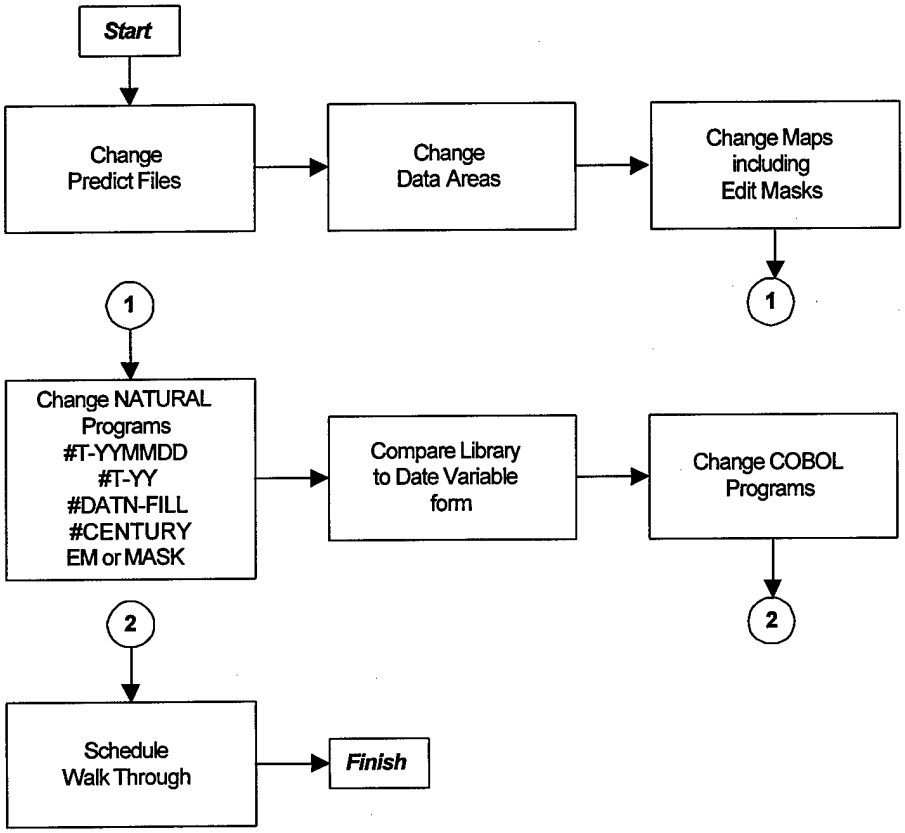
- Individual fields for each portion of a date.

  Example: Separate fields for each component of the date such as century, year, month, and day.

- Removal of any occurrence of 19' hard-coded as century.

Y2K Development Overview Flowchart

The following flowchart illustrates programming revisions necessary to implement Year 2000 dates:



Revising Date Fields for Year 2000 Processing

Use these instructions to revise date fields for the Year 2000 Processing.

Prerequisites

- Obtain and review the following resources:
  - Date variable form
  - Application specification
  - Detail program descriptions
- Record each change you make. Use this record to do the following:
  - Verify that the changes are complete.
  - Notify the database administrator of the field changes that were made.
- Record any errors you notice outside the scope of the Y2K project.
- Notify the CDC IRMO, MISB Chief and the IRMO, MISB Y2KSAC Project Leader of errors outside the scope of the Y2K project.

Follow These Steps

1 Run the **CATALL** Program and print out an error listing. Then correct any errors.

2 Change each Predict file as follows:

- Increase date fields (MMDDYY) from six to eight characters, and year fields (YY) from two to four characters
- Delete the use of two-byte CENTURY fields (CC).
- Run the **YR2KLORG** Program to change fields in views.
- Run the **YR2KCLPR** Program to make applicable changes for that field.

Run the **CATALL** Program and correct any errors.